

Customer No.: 31561
Docket No.: 10465-US-PA
Application No.: 10/707,354

AMENDMENT

Please amend the application as indicated hereafter.

In The Claims:

1. (currently amended) A circuit for enhancing a slew rate of an operational amplifier by providing an assistant current to a main output stage having outputting a main current, comprising:

a monitoring stage for receiving a signals from the main output stage and outputting a decayed push signal and a decayed pull signal, wherein the main output stage comprises a first field effect transistor with the first type and a second field effect transistor with the second type, the gates of the first and second field effect transistors are connected to an output of a differential amplifier and the main current further comprises a quiescent DC biased current; and

an assistant output stage for receiving the decayed push signal and the decayed pull signal to output an assistant current, whereby the slew rate can be enhanced by adding the assistant current to the main current comprising a third field effect transistor with the first type and a fourth field effect transistor with the second type, wherein a first input and a second input of the monitoring stage are connected to the gate of the first field effect transistor with the first type and the gate of the second field effect transistor with the second type, respectively, so as to receive signals from the main output stage, and then a first output and a second output of the monitoring stage are connected to the gate of the third field effect transistor with the first type and the gate of the fourth field effect

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transistor with the second type, respectively, so as to output the decayed push signal and the decayed pull signal to the assistant output stage.

2. (currently amended) The circuit of claim 1, wherein the assistant current further feeds back to the main output stage the monitoring stage comprises a fifth field effect transistor with the first type and a sixth field effect transistor with the second type.

3. (original) The circuit of claim 1, wherein the assistant current is turned on automatically after the main current is turned on.

4. (original) The circuit of claim 1, wherein the assistant current is turned off automatically before the main current is turned off.

5. (currently amended) A method for enhancing a slew rate of an operational amplifier for providing a push current and a pull current to a system having a main current, comprising:

detecting a first input and a second input;
generating a pull current and a push current from a main output stage, wherein the main output stage comprises a first field effect transistor with the first type and a second field effect transistor with the second type, the gates of the first and the second field effect transistors are connected to a first output and a second output of a differential amplifier;
the first output voltage of the differential amplifier turning on the first field effect transistor with the first type so as to generate the push current, and the second output voltage of the differential amplifier turning on the second field effect transistor with the second type so as to generate the pull current, wherein the push current and the pull current further comprises a quiescent DC biased current;

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~~generating a push current when a voltage of a second input is larger than a voltage of the first input and their difference is large enough to turn on at least one of the switches;~~

~~generating a pull current when a voltage of the first input is larger than a voltage of the second input and their difference is high large enough to turn on at least one of a plurality of switches~~

generating a decayed push current when the first output voltage passes through a fifth field effect transistor with the first type to the gate of a third field effect transistor with the first type;

generating a decayed pull current when the second output voltage passes through the gate of a sixth field effect transistor with the second type to the gate of a fourth field effect transistor with the second type, whereby the decayed push current or the decayed pull current is generated as an assistant current when either the third field effect transistor with the first type is turned on or the fourth field effect transistor with the second type is turned on.

6. (cancelled) The method of claim 5, wherein the push current and the pull current further feed back to one of the first input and the second input.

7. (previously amended) The method of claim 5, wherein the decayed push current and the decayed pull current ~~is~~ are turned on automatically after the main current is turned on.

8. (previously amended) The method of claim 5, wherein the decayed push current and the decayed pull current ~~is~~ are turned off automatically before the main current is turned off.

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9. (new) A circuit for enhancing a slew rate of an operational amplifier by providing an assistant current to a main output stage outputting a main current, comprising:

a monitoring stage, comprising a first DC voltage source for generating a decayed push signal and a second DC voltage source for generating a decayed a pull signal, wherein a first end of the first DC voltage source is connected to the gate of a first field effect transistor with the first type, another first end of the second DC voltage source is connected to the gate of a second field effect transistor with the second type, the first and second field effect transistors constitute the main output stage, the gates of the first and second field effect transistors are connected to an output of a differential amplifier and the main current further comprises a quiescent DC biased current; and

an assistant output stage, comprising a third field effect transistor with the first type and a fourth field effect transistor with the second type, wherein a second end of the first DC voltage source is connected to the gate of the third field effect transistor, and another second end of the second DC voltage source is connected to the gate of the fourth field effect transistor, whereby the assistant current is generated when either the third field effect transistor is turned on or the fourth field effect transistor is turned on.

10.(new) The circuit of claim 9, wherein the first and second field effect transistors constitute the main output stage, and the gates of the first and second field effect transistors are connected to an output of a differential amplifier.

11.(new) The circuit of claim 9, wherein the main current further comprises a quiescent DC biased current;

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12.(new) The circuit of claim 9, wherein the assistant current is generated when either the third field effect transistor is turned on or the fourth field effect transistor is turned on.

13. (new) The circuit of claim 1, wherein the first type is P type and the second type is N type.

14. (new) The circuit of claim 1, wherein the first type is N type and the second type is P type.

15. (new) The method of claim 5, wherein the first type is P type and the second type is N type.

16. (new) The method of claim 5, wherein the first type is N type and the second type is P type.

17. (new) The circuit of claim 9, wherein the first type is P type and the second type is N type.

18. (new) The circuit of claim 9, wherein the first type is N type and the second type is P type.